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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/689,275	10/20/2003	Ian Robinson	NG(ST)-6583	2918

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TAROLLI, SUNDHEIM, COVELL & TUMMINO L.L.P.
1300 EAST NINTH STREET, SUITE 1700
CLEVEVLAND, OH 44114

EXAMINER	
TU, JULIA P	

ART UNIT	PAPER NUMBER
2611	

DATE MAILED: 12/14/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/689,275	ROBINSON ET AL.	
	Examiner	Art Unit	
	Julia P. Tu	2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *10/20/2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-27* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-27* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *10/20/2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless -
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1-4, 6, 10-12, 19, 21, and 26 are rejected under 35 U.S.C. 102(e) as being anticipated by Tojo et al. (US 2004/0125860).

(1) with regard to claim 1:

Tojo et al. disclose a system for signal conversion, comprising:

a spreader that combines a spreading signal with an input signal to provide a spread input signal (52 and 57 in figure 5; also see page 5, claim 1, lines 2-3);

a signal converter that converts the spread input signal from a first domain to a second domain to provide a converted spread input signal (54 (ADC) in figure 5, also see page 5, claim 1, lines 3-5); and

a despreader that despreads the converted spread input signal to provide the input signal in the second domain (55 in figure 5, also see page 5, claim 1, lines 6-9).

(2) with regard to claim 2:

Tojo et al. further disclose a spreading code generator that produces spreading code to provide a direct sequence spread spectrum spreading signal (see figure 5).

(3) with regard to claim 4:

Tojo et al. further teach a spreading code generator that generates a pseudo random number code to provide a spreading signal (57 in figure 5).

(4) with regard to claim 6:

Tojo et al. further teach the first domain is one of a digital domain and an analog domain and the second domain is the other of the digital domain and the analog domain (see 54 (ADC) in figure 5).

(5) with regard to claim 10:

Tojo et al. further teaches at least one of the spreader and the despreader circuit comprises a mixer (see 52 and 55 in figure 5).

(6) with regard to claim 11:

Tojo et al. further teach a receiver comprising the system of claim 1 (see figure 4).

(7) with regard to claim 12:

Tojo et al. further teach a transmitter comprising the system of claim 1 (see figures 4 and 10).

(8) with regard to claim 19:

Tojo et al. teaches a method for signal conversion, comprising:

spreading a signal with a direct sequence spread spectrum (DS-SS) signal in a first domain (see 57, 52, spread spectrum process using PN sequence);

converting the spread signal from the first domain to a second domain (54 (ADC) in figure 5); and

despreading the signal with a DS-SS signal in the second domain (57, 55 in figure 5).

(9) with regard to claim 21:

Tojo et al. further teach the first domain is one of a digital domain and an analog domain and the second domain is the other of the digital domain and the analog domain (see figure 5; first domain is analog domain and second domain is digital domain).

(10) with regard to claim 26:

Tojo et al. teach a communication device comprising:

means for generating a direct sequence spread spectrum (DS-SS) signal (see figure 5);

means for combining the DS-SS signal with an input signal to produce a spread input signal (see 57, 52 in figure 5);

means for converting the spread input signal from a first domain to a second domain (see 54, ADC in figure 5); and

means for dispreading the spread input signal in the second domain (see 57, 55, in figure 5).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 3 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tojo et al. in view of Haas (US 2002/0054619).

(1) with regard to claim 3:

Tojo et al. disclose all of the subject matters in claim 1 above except for a spreading code generator that produces a frequency hopped spread spectrum (FH-SS) signal that is combined with the DS-SS spreading signal.

However, Haas discloses a spreading code generator that produces both a frequency hopped spread spectrum signal and the DSSS spreading signal (page 1, paragraph [0002], page 2, paragraph [0015], paragraph [0020]).

It is desirable to include a spreading code generator that produces both FHSS signal and the DSSS signal to minimize needless transmissions, complex circuitry, and

repetitive processes in order to promote the most efficient use of the available power (page 1, paragraph [0004]). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include a spreading code generator that produces both FHSS signal and DSSS spreading signal as taught by Haas into the system as taught by Tojo et al. to conserve power as well as to minimize costs (page 1, paragraph [0004]).

(2) with regard to claim 20:

Tojo et al. disclose all of the subject matters in claim 19 above except for spreading and despreading the signal with a frequency hopped spread spectrum (FH-SS) signal.

However, Haas discloses spreading and despreading the signal with a frequency hopped spread spectrum (FH-SS) signal (page 3, paragraph [0026]).

It is desirable to spread and despread the signal with a FHSS signal because the functional benefits associated with FHSS systems inevitably prove problematic in wireless networks requiring low cost and low power. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include spreading and despreading the signal with a FHSS signal as taught by Haas to the system as taught by Tojo et al. to conserve power as well as to minimize costs (page 1, paragraph [0004]).

5. Claims 5 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tojo et al. in view of Maruyama (US 5,802,101).

(1) with regard to claim 5:

Tojo et al. disclose all of the subject matters in claim 1 above except for feedback loop coupling the despreader to the spreader for time aligning the despreading with the spreading.

However, as shown in figure 2, Maruyama teaches a loop that connect the despreader and spreader. Also, power and clock controller 27 controls the operation of the despreader and spreader.

It is desirable to include a loop that connect the despreader and spreader as well as clock controller to control the operation of the despreader and spreader for the signal to be in phase with each other so that the spreader and despreader will operate at the same rate. Therefore, it would have been obvious to one of ordinary skill in the art provide more accurate timing to the communication system.

(2) with regard to claim 24:

Tojo et al. disclose all of the subject matters in claim 19 above except for converting the signal to a radio transmission frequency; filtering the signal; amplifying the signal; and transmitting the signal over an antenna.

However, Maruyama teaches a radio Tx section 23 comprise converting the signal to a radio transmission frequency; filtering the signal; amplifying the signal; and transmitting the signal over an antenna (column 3, lines 41-49).

One skill in the art would have recognized a radio Tx section comprise converting the signal to a radio transmission frequency; filtering the signal; amplifying the signal; and transmitting the signal over an antenna is a common method in the transmission system. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include a radio Tx section comprise converting the signal to a radio transmission frequency; filtering the signal; amplifying the signal; and transmitting the signal over an antenna as taught by Maruyama into the method as taught by Tojo et al. to improve the communication system.

6. Claims 7, 8, 22, and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tojo et al. in view of King et al. (US 6,683,905).

(1) with regard to claim 7:

Tojo et al. disclose all of the subject matters in claim 1 above except for a mixer for frequency converting the spread input signal prior to despreading.

However, King et al. teach a mixer for frequency converting before AD converter (7 in figure 2).

It is desirable to include a mixer for frequency converting before AD converter to ensure a stable operation. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include a mixer for frequency converting before AD converter as taught by King et al. to the system as taught by Tojo et al. to enhance to communication system.

(2) with regard to claim 8:

Tojo et al. disclose all of the subject matters in claim 1 above except for the signal converter is one of a delta-sigma analog-to-digital converter (ADC) and a delta-sigma digital-to-analog converter (DAC).

However, King et al. disclose the signal converter is a delta-sigma analog-to digital converter (ADC) (24 in figure 3A).

It is well known in the art to include the signal converter is a delta-sigma analog-to-digital converter so that any DC offset problems can be eliminated by incorporating a carrier error that is large relative to any deviation associated with a received waveform (column 2, lines 1-3). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include the signal converter is a delta-sigma analog-to-digital converter to minimized errors contributed by DC components (column 2, lines 3-4) as well as to enhance the communication system.

(3) with regard to claim 22:

Tojo et al. disclose all of the subject matters in claim 19 above except for frequency converting the signal to an intermediate frequency.

However, King et al teach frequency converting the signal to an intermediate frequency (see figure 3).

One skill in the art would have recognized that frequency converting the signal to an intermediate frequency is well known in the art. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include frequency converting the signal to an intermediate frequency as taught by King et al. to the method as taught by Tojo et al. to enhance the communication system.

(4) with regard to claim 23:

Tojo et al. disclose all of the subject matters in claim 19 above but does not explicitly teach receiving the signal from an antenna; filtering the signal; amplifying the signal; and converting the signal to an intermediate frequency signal prior to spreading the signal.

However, King et al. teach receiving the signal from an antenna (1 in figure 2); filtering the signal (filter 5 in figure 2); amplifying the signal (6 in figure 2); and converting the signal to an intermediate frequency signal prior to spreading the signal (IF signal in figure 2, column 3, lines 58).

One skill in the art would have recognized that receiving the signal from an antenna; filtering the signal; amplifying the signal; and converting the signal to an intermediate frequency signal prior to spreading the signal is a common method in the receive system. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include the method of receiving the signal from an antenna; filtering the signal; amplifying the signal; and converting the signal to an intermediate frequency signal prior to spreading the signal as taught by King et al. to the method as taught by Tojo et al. to improve the communication system.

7. Claims 9, 13, 14, 15, 17, 25, and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tojo et al. in view of Panasik et al. (US 2002/0160732).

(1) with regard to claim 9, 25, and 27:

Tojo et al. disclose all of the subject matters in claim 1 above except for a clipping component that reduces peaks associated with the spread input signal, the despreader mitigates degradation and out-of-band (OOB) emissions associated with the peak reduction.

However, Panasik et al. disclose for a clipping component that reduces peaks of the signal before analog-to-digital converter (figure 2, note: 20 is clipping circuit and 34 is analog-to-digital converter; page 1, paragraph [009]).

It is desirable to include the clipping component that reduces peaks of the signal before analog-to-digital converter to keep the dynamic range limited so that it matches the AD converter. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include the clipping component that reduces peaks of the signal before analog-to-digital converter as taught by Panasik et al. to the system as taught by Tojo et al. to keep the dynamic range limited so that it matches the AD converter.

(2) with regard to claim 13:

Tojo et al. disclose a signal conversion system comprising: a spreading code generator that produces a direct sequence spread spectrum (DS-SS) signal (see figure 5);

a spreading circuit that receives an input signal and combines the input signal with the DS-SS signal to provide a spread input signal (52 and 57 in figure 5);

a dispreading circuit that despreads the spread input signal (57 and 55 in figure 5).

Tojo et al. disclose all of the subject matter above except for a clipping component that reduces peaks associated with the spread input signal.

However, Panasik et al. disclose for a clipping component that reduces peaks of the signal before analog-to-digital converter (figure 2, note: 20 is clipping circuit and 34 is analog-to-digital converter; page 1, paragraph [009]).

It is desirable to include the clipping component that reduces peaks of the signal before analog-to-digital converter to keep the dynamic range limited so that it matches the AD converter. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include the clipping component that reduces peaks of the signal before analog-to-digital converter as taught by Panasik et al. to the system as taught by Tojo et al. to keep the dynamic range limited so that it matches the AD converter to provide better performance of the converter.

(3) with regard to claim 14:

Tojo et al. further teach one of the spreading circuit and despreading circuit comprises a mixer (see 52 and 55 in figure 5).

(4) with regard to claim 15:

Tojo et al. further teach a signal converter that converts the spread input signal from a first domain to second domain, the signal converter being an analog-to-digital converter (ADC) (see 54 in figure 5).

(5) with regard to claim 17:

Tojo et al. further teach second signal converter for converting the spread signal from the second domain to the first domain (see page 5, paragraph [0079]).

8. Claims 16 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tojo et al. in view of Panasik et al. (US 2002/0160732) as applied to claims 13 and 15 above, and further in view of King et al. (US 6,683,905).

(1) with regard to claim 16:

Tojo et al. and Panasil et al. disclose all of the subject matters in claims 13 and 15 above except for the signal converter is one of a delta-sigma analog-to-digital converter (ADC) and a delta-sigma digital-to-analog converter (DAC).

However, King et al. disclose the signal converter is a delta-sigma analog-to digital converter (ADC) (24 in figure 3A).

It is well known in the art to include the signal converter is a delta-sigma analog-to-digital converter so that any DC offset problems can be eliminated by incorporating a carrier error that is large relative to any deviation associated with a received waveform (column 2, lines 1-3). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include the signal converter is a delta-sigma analog-to-digital converter to minimized errors contributed by DC components (column 2, lines 3-4) as well as to enhance the communication system.

(2) with regard to claim 18:

Tojo et al. and Panasil et al. disclose all of the subject matters in claim 13 above except for a mixer for frequency converting the spread input signal before signal convertion.

However, King et al. teach a mixer for frequency converting before AD converter (7 in figure 2).

It is desirable to include a mixer for frequency converting before AD converter to ensure a stable operation. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include a mixer for frequency converting before AD converter as taught by King et al. to the system as taught by Tojo et al. to enhance to communication system.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Julia P. Tu whose telephone number is 571-270-1087. The examiner can normally be reached on 7:30 to 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chieh M. Fan can be reached on 571-272-3042. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

J.T.
12-07-2006

CHIEH M. FAN
SUPERVISORY PATENT EXAMINER